Alberta

Demographic Spotlight

December 2010

MORTALITY IN ALBERTA

HIGHLIGHTS

- Alberta has experienced an increasing number of deaths due to the growing and aging population.
- A similar upward trend has been observed in other provinces; however, only Alberta, Ontario and British Columbia have seen their populations grow faster than the number of deaths.
- The gap between male and female deaths has slowly shrunk over time in Alberta.
- Alberta has one of the lowest crude death rates (i.e. deaths per 1,000 persons) in the country.
- Life expectancy at birth in Alberta has been increasing for both sexes; however, males have experienced larger gains.

TREND OF DEATHS

Deaths in Alberta have almost doubled from approximately 11,000 in 1972 to 21,000 in 2009[1], yielding an average annual growth rate of 1.9% (**Figure 1**). This was slightly below the average population growth of 2.1% over the same period. In addition to the expanding population, the upward trend in deaths is also due to population aging. The share of seniors aged 65 and above population has increased from 7.2% in 1972 to 10.4% in 2009; meanwhile, the share of deaths from seniors has grown from 60.1% to 71.7% over the same period.

In terms of cause of death, statistics for 2006-2008 show that the major causes of death in Alberta[2], included circulatory system diseases neoplasms (i.e., cancer/tumors) and respiratory system diseases. Circulatory system diseases and neoplasm diseases accounted for 31.7% and 27.9% respectively, of the total 60,300 deaths recorded in Alberta during the three year period. Circulatory system diseases also had the highest mortality rate of 187, which means 187 people died of circulatory system diseases for every 100,000 Albertans.

Males and females both experienced an upward trend in the number of deaths. **Figure 2** reveals a consistent pattern that more males die than females every year; however, the gap between male and female deaths has

Figure 1: Deaths and Population in Alberta

Figure 2: Deaths by Gender in Alberta

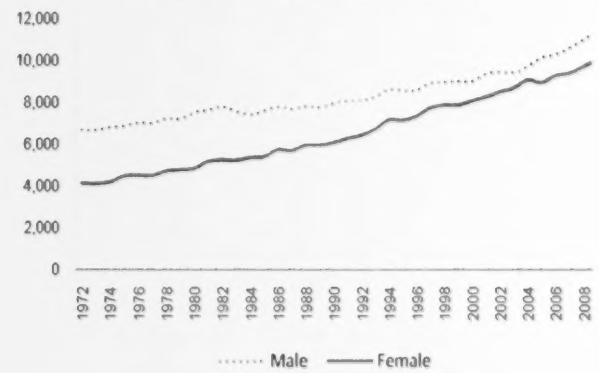
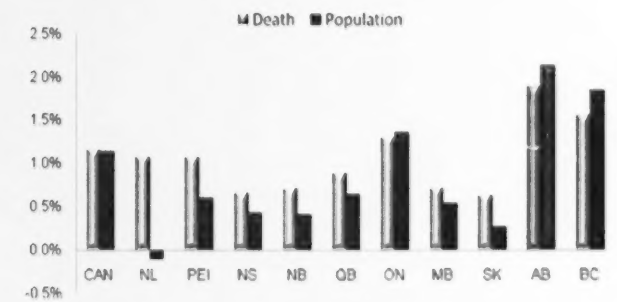


Figure 3: Average Annual Growth Rates of Population and Deaths in Canada and Provinces, 1972-2009



[1] All data used in this spotlight are from Statistics Canada unless specified. Note the term "year" means from July one year to June next year. For example, 2009 means from July 2008 to June 2009.
[2] Alberta Health and Wellness

gradually narrowed from an annual average of 2,500 in the 1970s to 1,000 in the 2000s.

At the national level, the number of deaths grew at a slower rate of 1.2% annually on average for the period 1972-2009. This was likely attributed to the lower average annual population growth of 1.1%. As a result, Alberta's share of deaths in Canada has been slowly growing from 6.8% in 1972 to 8.8% in 2009. Meanwhile, Alberta's share of total population in Canada has grown from 7.6% to 10.9% during the same period.

Among the provinces, Alberta has had the biggest increase in the number of deaths over the past 37 years (**Figure 3**). This was largely due to its fast population growth. In contrast, Saskatchewan had the lowest growth in the number of deaths as a result of its slow population growth. Except for Alberta, British Columbia and Ontario, all other provinces have seen their population growth falling below the growth in the number of deaths. This was particularly true for the Atlantic provinces such as Newfoundland and Labrador, where the age structure of their population is relatively old.

Crude Death Rate

The crude death rate (CDR) measures the number of deaths per 1,000 persons. For example, there were about 21,000 deaths in Alberta in the year 2009 (July 2008 to June 2009) and the midyear population (as Jan.1 2009) was estimated at 3.6 million. This yielded a CDR of 5.9. This means that there were 5.9 deaths for every 1,000 residents in Alberta. Alberta had a decreasing CDR in the 1970s and 1980s but has experienced slight increases since the 1990s (**Figure 4**). Over the past decade, the CDR in Alberta has been steady at the rate of 5.8. Nationwide, the CDR was 7.2 over the same period. Among the provinces, Saskatchewan has the highest 10-year average CDR at 9.0, followed by Prince Edward Island (8.7) and Nova Scotia (8.7) while Alberta has the lowest average rate.

Age Specific Mortality Rate

The age specific mortality rate measures total number of deaths per year per 1,000 population of a given age. In general, the differences in age specific mortality rates for the young and the old aged 60 below are not pronounced. Nonetheless, newborns (i.e., age 0) experience higher mortality rate than the age group 1 to 60. More specifically, the age specific mortality rates are relatively low in childhood, remain flat during the young adult years, and increase progressively with age especially after age 65 (**Figure 5**). Males consistently have higher age specific mortality rates across all ages than females, which might result from sex hormones and less healthy living behaviors; moreover, this gap expands after age 65 in Alberta.

Figure 4: Crude Death Rate in Canada and Alberta 1972-2009

Figure 5: Age Specific Mortality Rates in Alberta, 3-year Average (2007-2009)

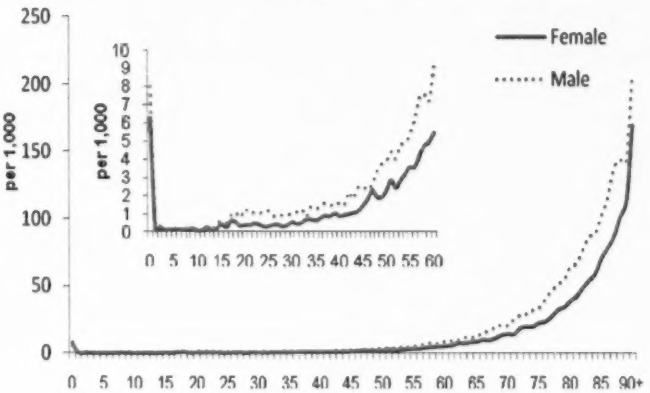
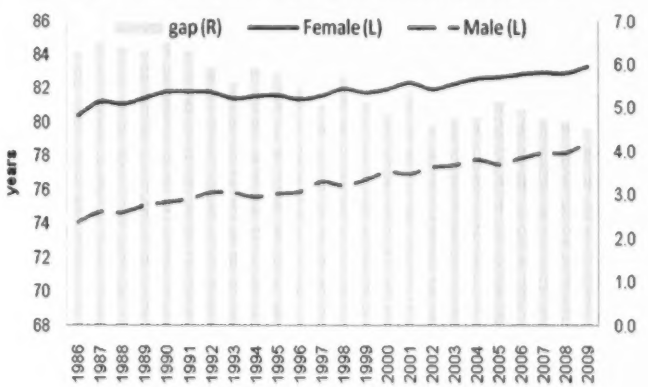


Figure 6: Life Expectancy at Birth in Alberta, 1986-2009



Life Expectancy at Birth

Life expectancy at birth is defined as the number of years that a new born baby is expected to live. It is derived from the age specific mortality rates. Since the mortality rates for females tend to be lower than males, the life expectancy for females is also longer. Life expectancy at birth in Alberta has been increasing for both sexes; however, males have experienced larger gains. As illustrated in **Figure 6**, female life expectancy increased from 80.4 in 1986 to 83.3 in 2009[3], with a gain of 2.9 years; in contrast, male life expectancy increased from 74.1 to 78.8, a gain of 4.7 years during the same period. As a result, the gap in life expectancy at birth has shrunk between females and males, from 6.3 years in 1986 to 4.5 years in 2009.

Regional Level

Further analyses at regional levels are presented below. Due to the lack of reliable statistics for small areas, Alberta is divided into five major regions based on the physical location of health care facilities and operating systems. These five regions and their respective census divisions are listed below. Note these five regions are not the same as the five Alberta Health Services Continuum Zones.

Regions	Census Divisions
North	16,17,18,19
Central	7,8,9,10,12,13,14
South	1,2,3,4,5,15
Edmonton	11
Calgary	6

All regions experienced an upward trend in the number of deaths from 1997 to 2009. Edmonton and Calgary took the lead due to their larger populations. However, in terms of crude death rates, Southern Alberta had the highest rate (with a 13-year average of 7.7 per 1,000 persons) while Northern Alberta had the lowest rate at 4.2 (**Figure 7**), which may be due to the differences in age structure. Southern Alberta had the largest share of seniors both for the age groups 65+ and 80+ while Northern Alberta had the smallest shares.

When comparing the age specific mortality rate for both age groups below 64 and 65+ at the regional level, Calgary and Edmonton had the lowest rates as shown in **Figure 8**. Given that mortality is a complex function of incidence of diseases/injury as well as survival, many factors such as socioeconomic factors, environment and genetics along with lifestyle and health behaviors (smoking, nutrition, exercise, etc) would contribute to incidence of chronic diseases and deaths. Data from Alberta Health and Wellness show that Calgary and Edmonton have lower

Figure 7: Crude Death Rate by Region at 13-Year Average, 1997-2009

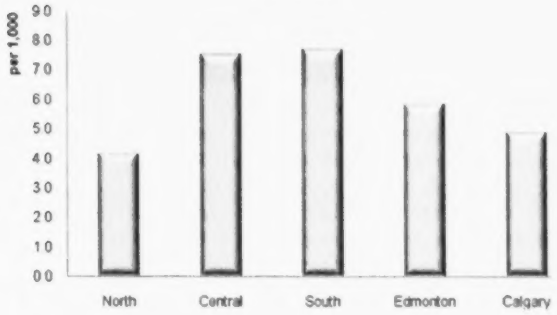


Figure 8: Age Specific Mortality Rate at 13-Year Average 1997-2009

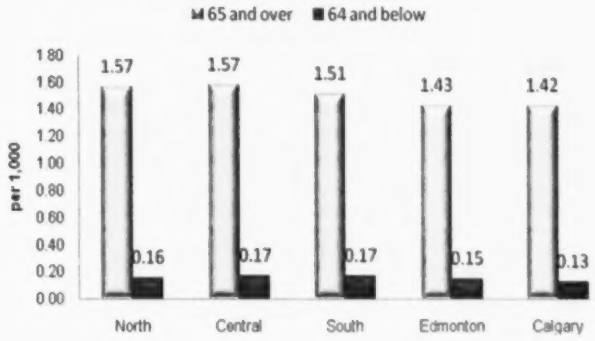
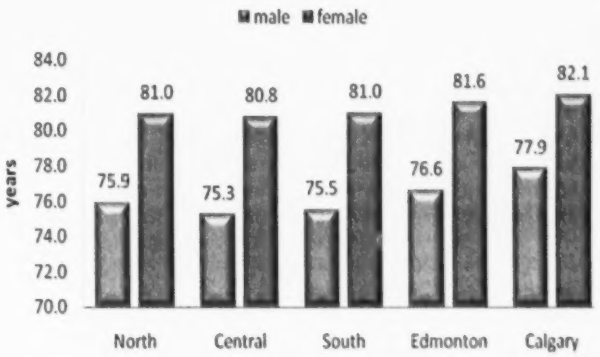


Figure 9: Life Expectancy at Birth at 13-year average 1997-2009



rates of many of these chronic diseases (e.g., both regions have the lowest stroke rates). For instance, the mortality rates due to the two leading causes of death (circulatory system and neoplasms) are statistically significantly lower in Calgary and Edmonton, than Alberta (**Table 1**), especially for males.

Over the past decade, all regions had similar female life expectancies at birth, around 81 years, but the life

expectancies at birth for males were slightly different. Males in Calgary had the longest life expectancy at 77.9 in contrast to the lowest of 75.3 in Central Alberta (**Figure 9**). The difference in male life expectancy between Calgary and Central Alberta may be due to variances of age specific mortality in the very young and very old age groups. Calgary and Northern Alberta demonstrated the fastest increase in female and male life expectancy while Southern Alberta had the slowest gain for both genders.

Table 1: Leading Causes of Deaths[4]

		Male Mortality Rate		Female Mortality Rate	
(Per 100,000 population)					
	Former Health Regions	Circulatory system diseases	Neoplasms	Circulatory system diseases	Neoplasms
Alberta		*211*	*187*	*132*	*137*
South	R1 R2	221	187	144	134
Calgary	R3	193	171	132	130
Central	R4 R5	232	203	144	144
Edmonton	R6	204	190	119	135
North	R 7 R8 R9	243	212	147	157

[4] These mortality rates are derived from Alberta Health and Wellness.